Pool Survey Protocol

Service Unit: Seney NWR
Species: Osprey (*Pandion haliaetus*), Common Loon (*Gavia immer*), Trumpeter Swan (*Cygnus buccinator*), Northern Harrier (*Circus cyaneus*)

JUSTIFICATION AND OBJECTIVES

The above species are the *Resources of Concern* associated with the anthropogenic pools system at the refuge and are *Michigan IBA* species associated with the same. The Refuge has data on Trumpeter Swan since their introduction at the refuge in 1991 (Corace et al. 2006) and has long-term data (1992-present) on Osprey and Common Loon (1987-present; McCormick et al. 2007; Tischler et al. 2011) as well; no long-term data exists for Northern Harrier. The objective of this survey is to maintain these long-term data sets to monitor the trends of these *Resources of Concern* over time.

STATISTICAL CONSIDERATIONS

There are no major statistical considerations; surveys for these species (other than Northern Harrier) are nearly complete counts as there are likely few, if any, birds nesting on the refuge that are not being surveyed. The number of adults and chicks are counted over the field season for all species except Northern Harrier. Total number of adults (per pool), chicks hatched, means, standard errors, and trend analysis will be used on this data for internal and external purposes.

DATA COLLECTION PROCEDURES

Approximately once a week all major pools in Units 1-3 are surveyed by volunteers and/or interns over a 2-day period, starting with ice out and going through October.

DATA ANALYSIS AND REPORTING

Data will be placed into a database where it will be graphed and trend lines added to look at data over time. Information will be summarized and used in research and other information needs (including Visitor Services).

MANAGEMENT ACTION THRESHOLDS

None required at this time. No data that we are aware of illustrates any intricacies of habitat management for these species. The refuge should simplify its pool management to try to provide (in general) high water levels (when possible) through the breeding season on pools used by these species. Poor reproduction in any given season has not been shown to be a statement about habitat management *per se*. In fact, it seems that stresses off refuge (such as

botulism) may be more important to the populations of these species than habitat management at the refuge.

DATA STORAGE PROCEDURES

A database (Excel file) should be kept and updated at the refuge each year.

SPECIAL CONSIDERATION

None required.

LITERATURE USED

Corace, R.G. III, D.L. McCormick and V. Cavalieri. 2006. Population growth parameters of a reintroduced Trumpeter Swan flock, Seney National Wildlife Refuge, Michigan, USA (1991-2004). *Waterbirds* 29:38-42.

McCormick, D.L., Kaplan, J.D., and K.B. Tischler. 2007. Common Loon research at Seney National Wildlife Refuge. Unpublished. Common Coast Research and Conservation, Germfask, MI.

Tischler, K.B. 2011. Species Conservation Assessment for the Common Loon (*Gavia immer*) in the Upper Great Lakes. U.S. Forest Service, Chippewa National Forest. 59 pp.

EFFORT AND COSTS

If done by refuge staff, this would be the most time consuming and expensive wildlife monitoring program at Seney. Fortunately, the refuge has a dedicated volunteer team (Jim and Jody Patton) who conducts this survey and spends 10-13 hrs per week collecting data (x 28 weeks) = 280-264 hr. Database entry and other administrative tasks take 1- 2 hr per week = 28-56 hr. Fuel costs are approximately $30/week = $840.